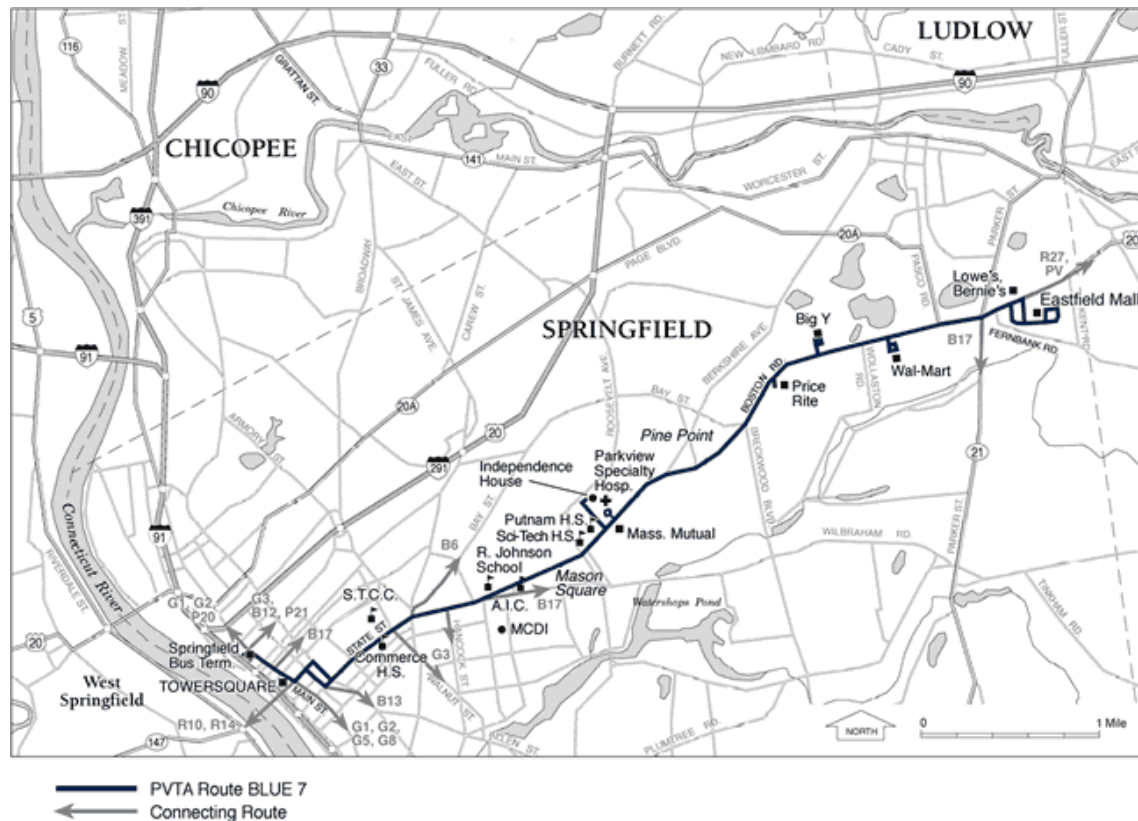


Route Evaluation

7 STATE ST / BOSTON RD EASTFIELD MALL

Service Design. Route 7 State Street / Boston Road – Eastfield Mall is a radial route that connects the Springfield Bus Terminal (SBT) and downtown Springfield with northeast Springfield, including Wal-Mart and Eastfield Mall (see Figure 1).

FIGURE 1 – ROUTE MAP



System Interaction and Transfer Opportunities. As a radial route serving the SBT, Route 7 offers connections to the rest of the PVTA system. In addition, there are opportunities for on-street connections along the route:

- **Route 1** for local service within Springfield and to Chicopee
- **Route 2** for local service within Springfield and to East Longmeadow
- **Routes 3 and 8** for local service within Springfield

- **Route 5** for local service within Springfield and to Longmeadow and Enfield, CT
- **Route 6** for local service within Springfield and to Ludlow
- **Route 10** for local service to West Springfield and Westfield
- **Route 14** for local service to West Springfield and Agawam
- **Route 17** for local service within Springfield with one trip to Wilbraham
- **Route 27** for limited service to Wilbraham

Alignment/Service Patterns. From downtown Springfield, Route 7 operates along State Street and Boston Road to the Eastfield Mall. On weekdays, the route has several variants that consist of slight deviations off of Boston Road to serve major destinations that are just outside of walking distance from the corridor. Route 7 has some trips that turn off of State Street, or turn off on request, to serve the Mass Mutual campus and Independence House. Some trips also turn off of Boston Street to serve Price Rite. There are also several “Helper Trips” on Route 7 that travel directly between downtown Springfield and Pine Point; some but not all of these trips will stop at Mason Square.

Saturday service follows the primary alignment from SBT to Eastfield Mall. Saturday service also includes the same deviations as weekdays; every third trip serves Independence House, Price Rite or stays on the State Street/Boston Road. None of the trips go to Mass Mutual. There are also seven “express” trips that travel directly between SBT and Wal-Mart, before continuing to Eastfield Mall. In addition, on Saturday night, buses only serve Eastfield Mall directly until 6:00 PM. After 6:00, service to the mall is provided from a stop on Boston Road, near the mall.

On Sundays, Route 7 is combined with Route 6 to create a route serving SBT, Mason Square or Bay and Berkshire (alternating between the two), Wal-Mart, and Eastfield Mall. Sunday trips traveling via Mason Square also serve the Independence House.

Service Schedule. Route 7 operates seven days a week. On weekdays, the route operates every 15 minutes in the peak and every 20 minutes in the off-peak, providing 60 eastbound and 61 westbound trips. The service runs between 5:00 AM and 10:10 PM.

On Saturdays, a bus leaves every 20 minutes for a total of 53 trips in each direction between 5:00 AM and 9:30 PM. Sunday service consists of 9 eastbound trips and 8 westbound trips, operating hourly between 9:00 AM and 5:15 PM (Figure 2).

FIGURE 2 – SCHEDULE OVERVIEW

SERVICE DAY*	SPAN OF SERVICE	TYPICAL FREQUENCY (PEAK / OFF-PEAK)	DAILY TRIPS WESTBOUND / EASTBOUND
Weekday	5:00 AM – 10:10 PM	15 / 20	61 / 60
Saturday	5:00 AM – 9:30 PM	20	53 / 53
Sunday	9:00 AM – 5:15 PM	60	8 / 9

Source: PVTa route schedules.

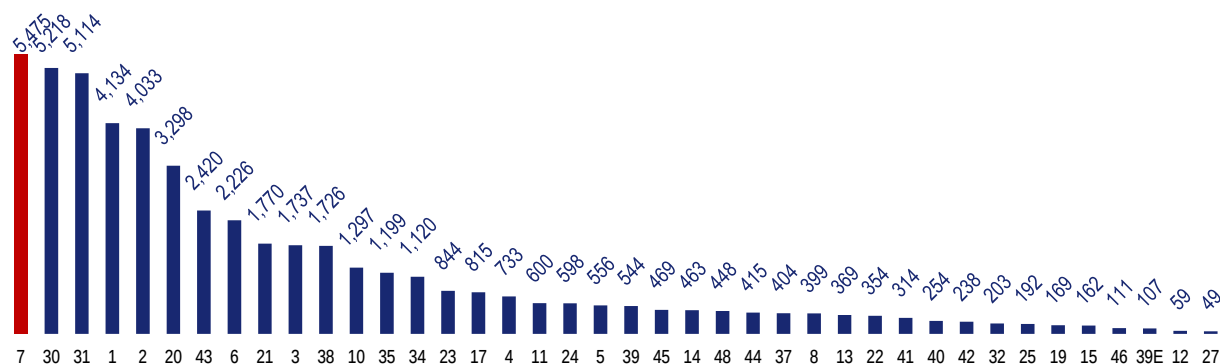
Ridership by Service Day. Route 7 has the highest ridership of all PVTa routes, with 5,475 weekday passengers, or 45.2 passengers per trip (see Figure 3 and 4). This is nearly twice the PVTa average for weekday riders per trip. Saturday ridership is lower, but still quite high and 44% higher than the PVTa average for Saturday ridership per trip. Sunday ridership per trip is low compared to other service days, and is 22% lower than the PVTa average for Sunday ridership per trip.

FIGURE 3 | RIDERSHIP STATISTICS

SERVICE DAY	AVERAGE RIDERSHIP PER DAY	AVERAGE RIDERSHIP PER TRIP	
	Route 7	Route 7	System Avg
Weekday	5,475	45.2	23.4
Saturday	3,186	30.1	20.9
Sunday	512	15.1	19.4

Source: PVTa performance data.

FIGURE 4 – AVERAGE WEEKDAY RIDERSHIP



Ridership by Stop. Route 7 operates along an excellent transit corridor with lots of important destinations and strong anchors at either end of the route (SBT and Walmart). As a result, the route has very few segments of low ridership (see Figures 5 and 6). One exception is State Street between Mass Mutual and Ambrose Street, which includes St. Michael's cemetery. Most stops served by Route 7 attract at least 30 boardings or alightings per day. Outside of downtown Springfield, the following stops attract 100 or more boardings or alightings per day:

- **Main and Federal** has more than 120 boardings and 115 alightings, and serves Springfield Technical Community College and Commerce High School.
- **Mason Square** with almost 190 boardings serves several schools and retail plazas.
- **American International College** has 115 alightings.
- **SciTech High School** with 100 boardings, also serves the Mass Mutual Campus.
- **Springfield Wal-Mart** has 245 boardings.
- **Boston and Eastfield Mall Parking Lot** with more than 100 boardings, serves the mall and a large retail plaza on the north side of Boston Road.
- **Eastfield Mall** has nearly 240 boardings.

In terms of the overall boarding pattern, riders traveling inbound (west) almost exclusively get on the bus at the outer end of the route (see Figure 5) all the way to Mason Square. Once at Mason Square, riders are still boarding in larger numbers than they are alighting, but passengers do begin to get off the bus. The passenger load on board peaks along State Street and stays high until the bus gets into downtown. In downtown, riders start to get off the bus in equal or larger numbers than those boarding. Thus the number of riders on the bus is greatest where it occurs along State Street, close to the intersection of State and Federal.

FIGURE 5 – WEEKDAY WESTBOUND RIDERSHIP BY STOP GRAPH

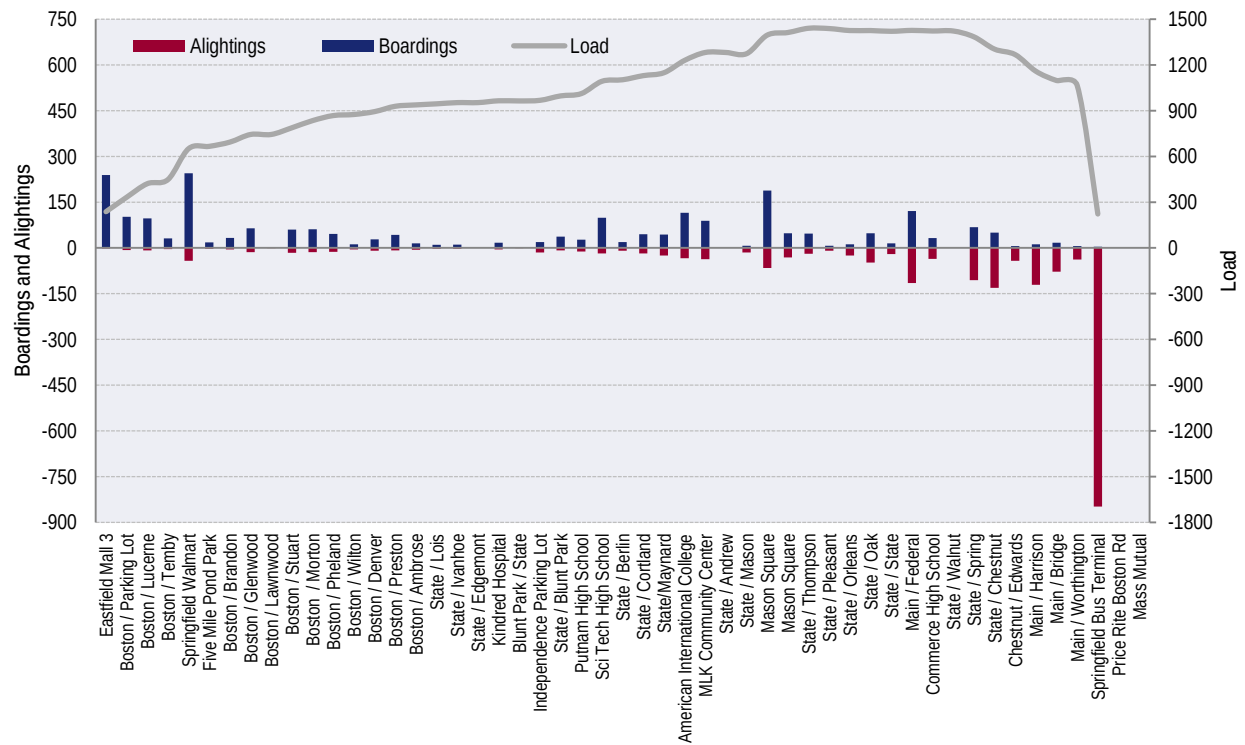


FIGURE 6 – WEEKDAY WESTBOUND RIDERSHIP BY STOP MAP

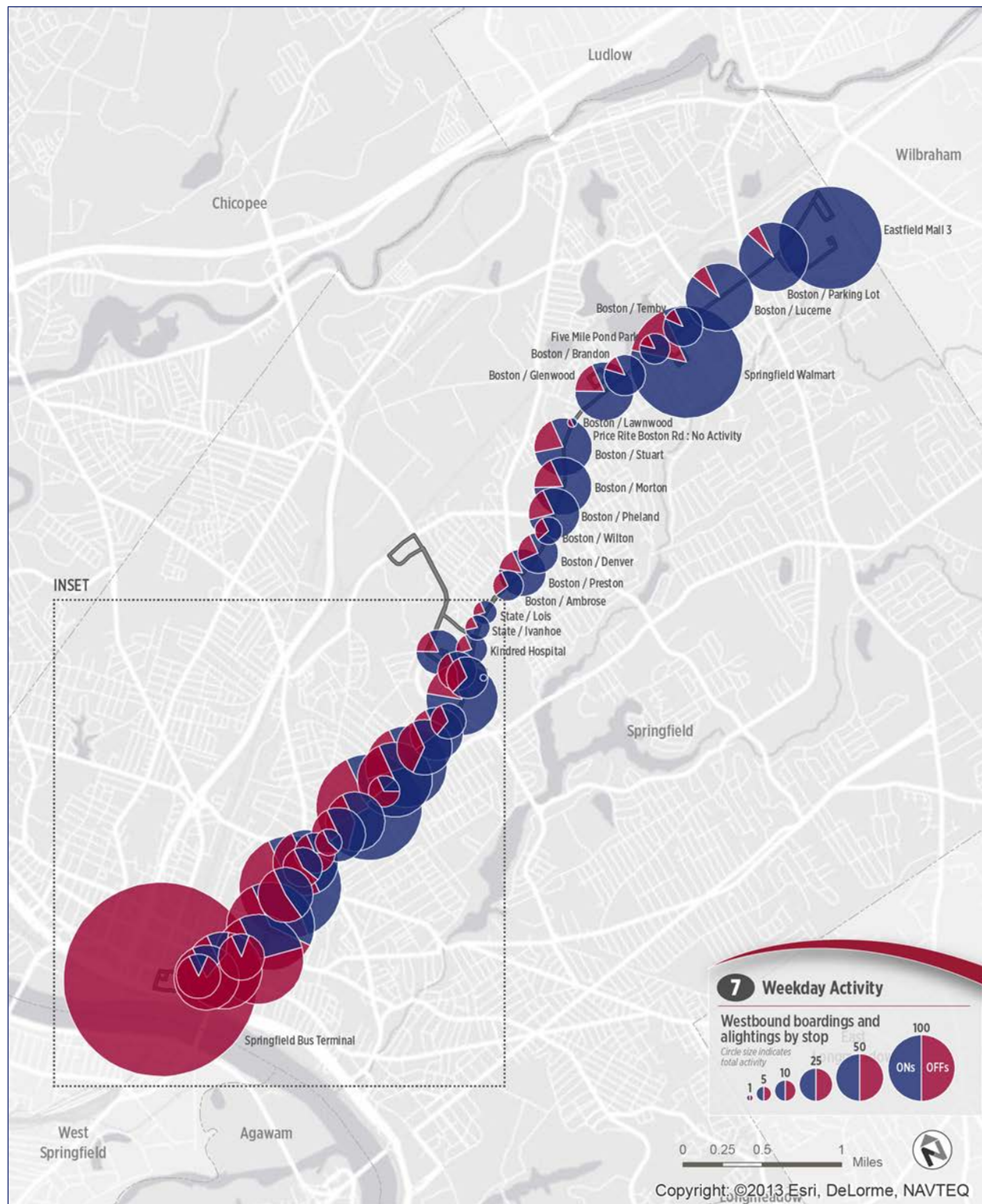


FIGURE 7 – WEEKDAY WESTBOUND RIDERSHIP BY STOP MAP [INSET]



Weekday Ridership by Trip. Route 7 carries an average of 45.2 riders per trip on weekdays with a fairly balanced directional split (see Figures 8 and 9). Ridership activity is strong for most of the service day but drops off, along with frequency, after 6:00 PM. Before 6:00 PM, the most noticeable drops in ridership per trip occur during periods of higher frequency, indicating that overall demand is high but being absorbed by frequent buses. Eastbound ridership is very low before 6:30 PM, but early eastbound trips are necessary to put buses in position for westbound trips which have significantly higher ridership demand (especially the first westbound trip in the day).

High ridership during the mid-day and peak periods suggest a diverse set of trip types, including shopping, school trips, and social services. Several trips in each direction have maximum loads of over 40 passengers, exceeding the typical seating capacity of a 40' transit bus.

FIGURE 8 – WEEKDAY WESTBOUND RIDERSHIP BY TRIP

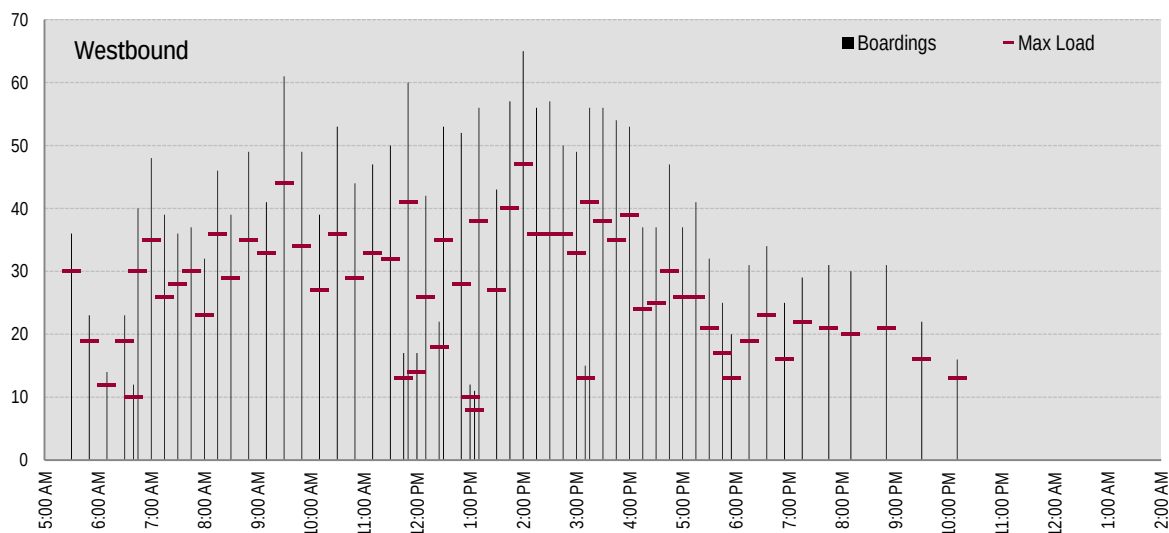
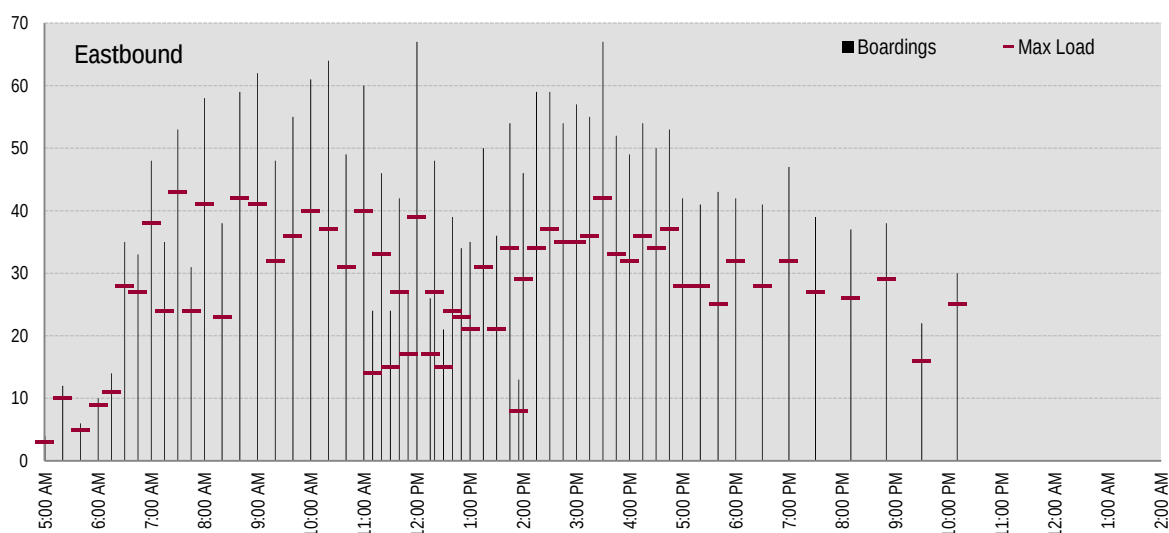


FIGURE 9 – WEEKDAY EASTBOUND RIDERSHIP PER TRIP



Saturday Ridership by Trip. Saturday trips on Route 7 average 30.1 passengers per trip. Ridership is highest during the midday and evening, which is consistent with shopping trips (see Figures 10 and 11). Saturday ridership before 7:00 AM is generally low, especially in the eastbound direction. However, several later Saturday trips have maximum loads above 30 passengers, which is below a bus's seating capacity but can be quite crowded when many passengers have shopping bags.

FIGURE 10 – SATURDAY WESTBOUND RIDERSHIP BY TRIP

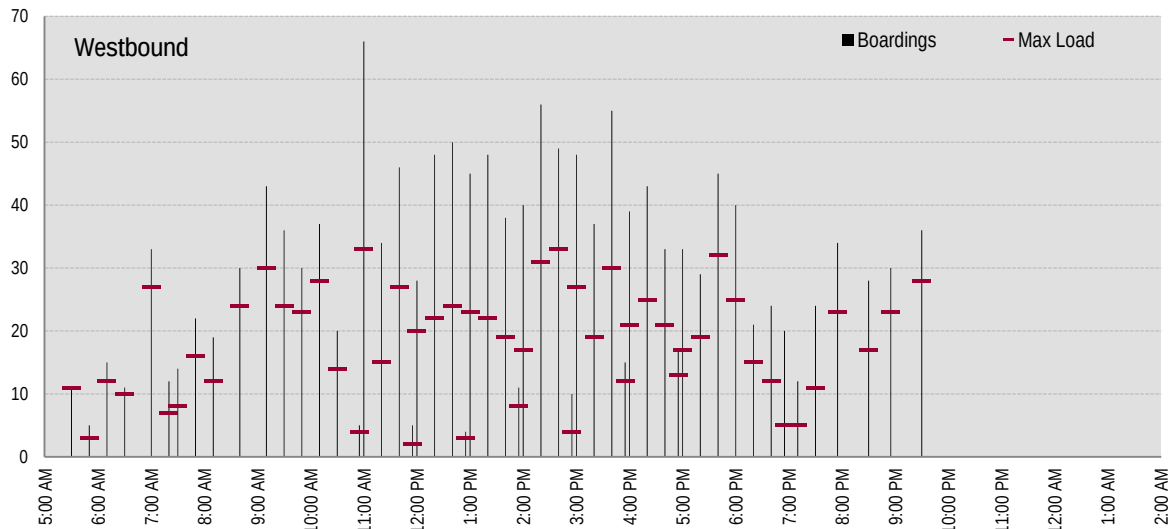
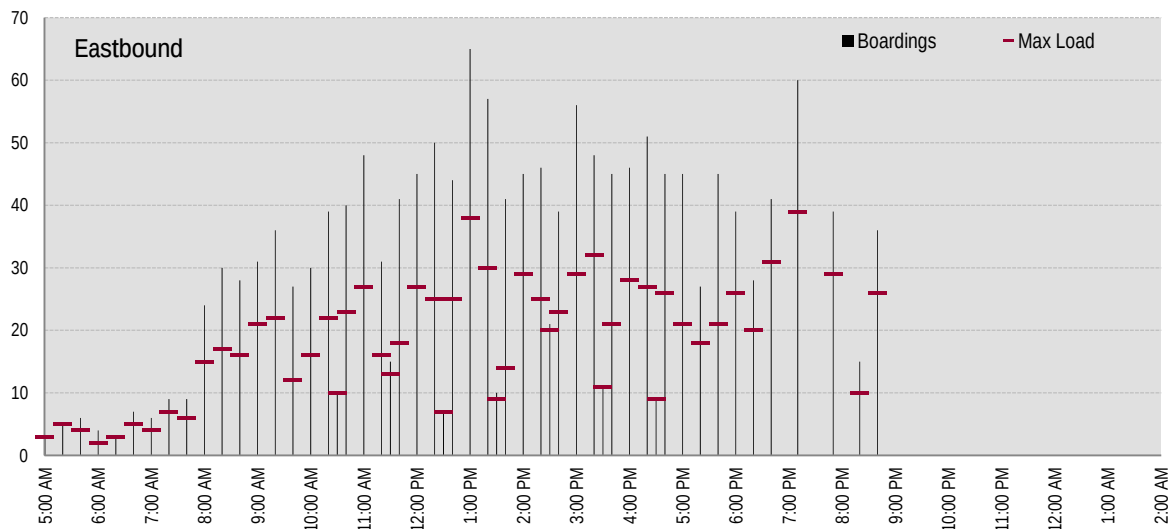


FIGURE 11 – SATURDAY EASTBOUND RIDERSHIP PER TRIP



Sunday Ridership by Trip. Route 7 offers far less service on Sunday and total ridership is low compared to weekdays and Saturdays. However, maximum loads are 20 passengers or higher on several trips and passenger activity is relatively steady for the entire service day. This suggests that there is likely demand for both earlier and later service (see Figures 12 and 13).

FIGURE 12 – SUNDAY WESTBOUND RIDERSHIP BY TRIP

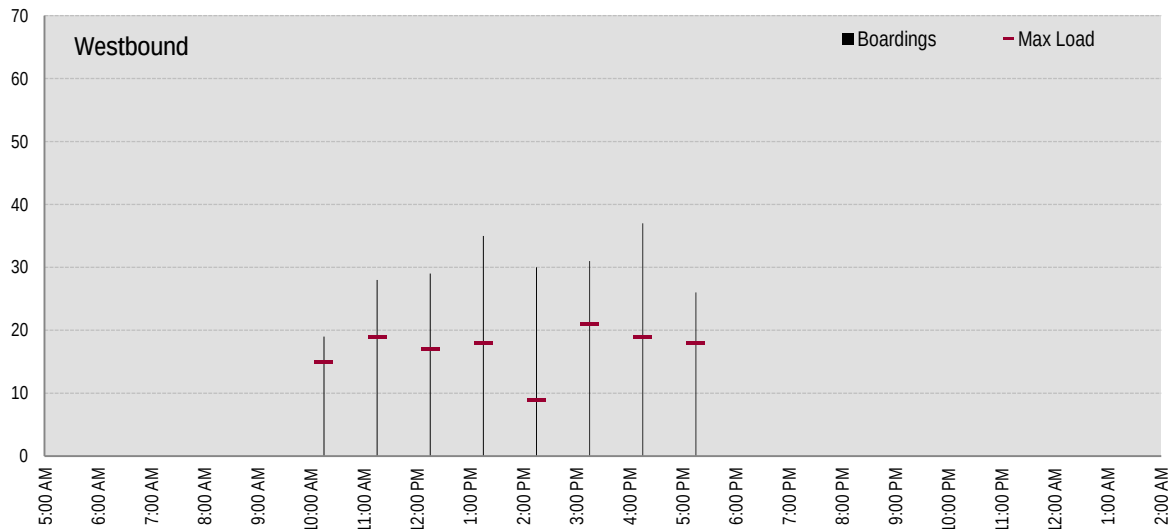
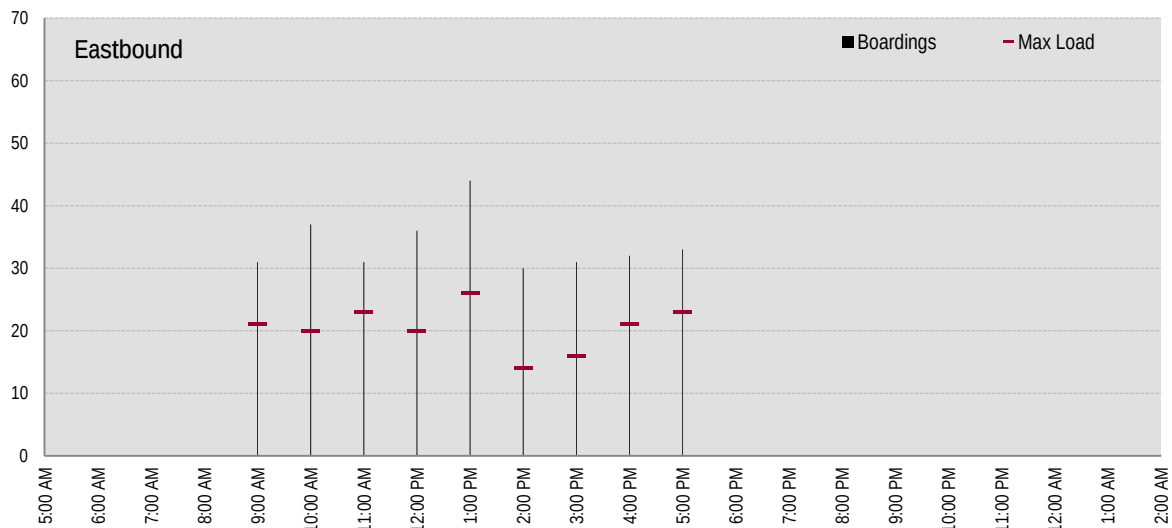


FIGURE 13 – SUNDAY EASTBOUND RIDERSHIP PER TRIP



Performance. Route 7 has PVTA's fourth lowest weekday operating cost per passenger and third highest ridership per revenue hour (see Figures 14 and 15). In general, the route outperforms the system-wide averages for operating cost per passenger, passengers per vehicle hour, and passengers per vehicle mile for all service days.

FIGURE 14 | PERFORMANCE MEASURES

PERFORMANCE MEASURE	WEEKDAY		SATURDAY		SUNDAY	
	ROUTE 7	SYSTEM AVG	ROUTE 7	SYSTEM AVG	ROUTE 7	SYSTEM AVG
Operating Cost per Passenger	\$0.73	\$2.05	\$1.55	\$3.54	\$1.49	\$4.55
Passengers per Revenue Vehicle Hour	52.5	32.9	38.0	31.5	40.3	28.9
Passengers per Revenue Vehicle Mile	5.6	2.6	3.9	2.4	3.7	2.3

Source: PVTA performance data.

FIGURE 15 – WEEKDAY OPERATING COST PER PASSENGER

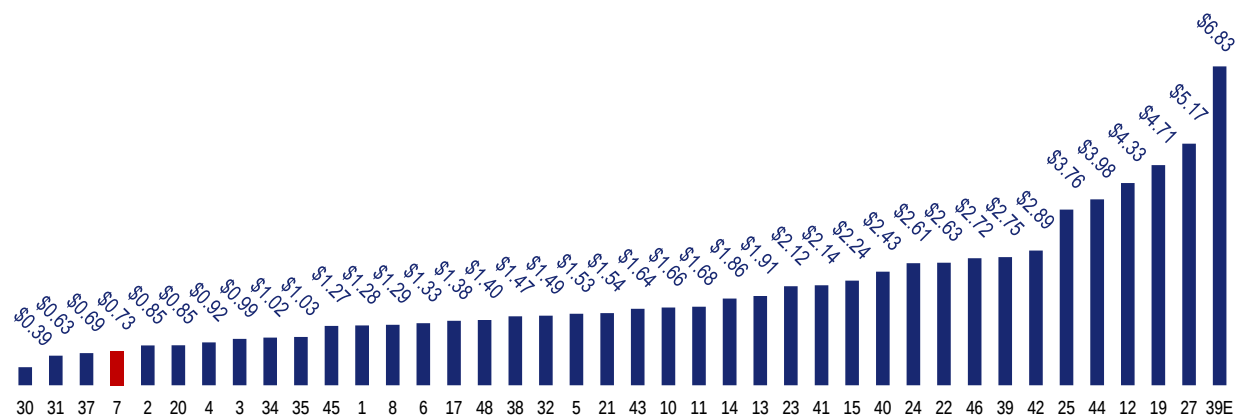
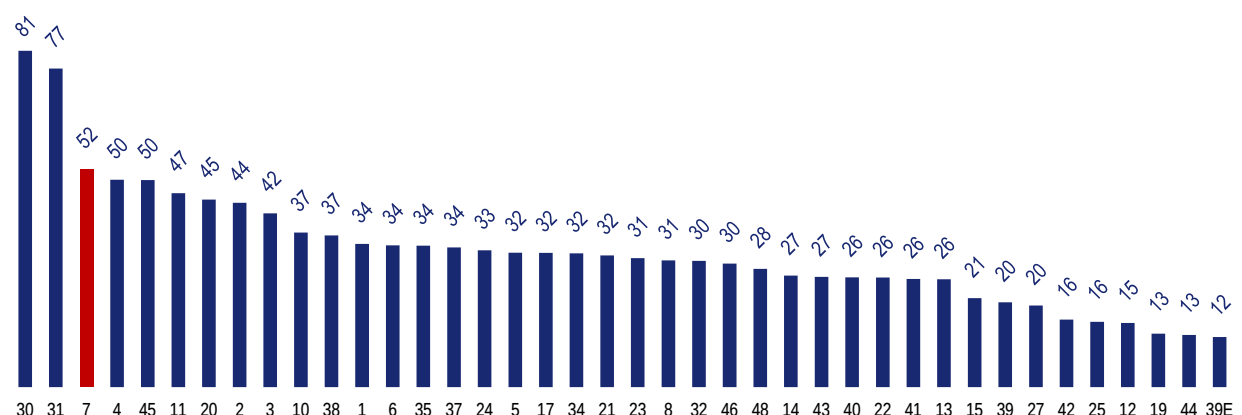


FIGURE 16 – WEEKDAY PASSENGERS PER REVENUE HOUR



SERVICE IMPROVEMENT OPTIONS

Route 7 is one of the strongest performing routes in the PVTA network, with the highest total ridership in the system. The route performs well because it features many of the design characteristics that make transit appealing to passengers: simple and direct routing, high service frequency, mostly regular departure times, strong anchors, and a diversity of destination types. Opportunities to improve the route further include:

- **Minimize deviations.** Most of the deviations on Route 7 are very short, but nevertheless have an impact on travel time. The deviations take buses into parking lots and driveways of major destinations that are set back from the service corridor. In some cases these deviations could be avoided with better passenger amenities and pedestrian infrastructure. For example, large bus shelters could be installed on State Street near Mass Mutual to provide a comfortable waiting environment for riders and to eliminate the need for buses to enter the campus itself to pick up and drop off passengers.
- **Reduce early morning Saturday service.** Several trips before 7:00 AM on Saturday carry fewer than 10 passengers per trip. Some of these trips can be eliminated with little impact to ridership.
- **Consider branding Route 7 as enhanced bus BRT service or create transit corridor along State Street and Boston Road.** Routes 7 and the State Street/Boston Road corridor already has high service frequency and several stops with more than 100 passenger boardings per day. Adding features such as enhanced shelters with real-time bus arrival information at some stops and eliminating other stops with low ridership, while also reducing deviations, can make the service faster and more appealing to prospective riders. West of Mason Square, where Route 7 converges with other routes in the State Street corridor, Route 7 could operate as rapid bus/BRT and skip some stops served by other routes in order to further speed up service.
- **Coordinate service along State Street.** State Street is a key corridor in downtown Springfield with a high density of important destinations for transit riders. It also functions as a transition corridor between the residential developments in the north and east and the urban facilities downtown. As a result, PVTA operates several routes on State Street between SBT and Oak Street, including Route 3, 6, and 7. There are opportunities to better coordinate service along the corridor to ensure consistent, regular headways along the corridor and use the corridor to offer opportunities to change direction and make cross-town connections.
- **Create a Super Stop at the intersection of State and Oak Streets.** Given the demand along State Street and high ridership along the corridor, it makes sense to develop a super stop at Oak Street as a technique to support passenger transfers and in conjunction with cross town service. Even without new cross town service, the super stop could encourage people to transfer between routes without traveling all the way into downtown.
- **Increase weekday service frequency.** As a radial service, Route 7 has some of the characteristics of a commuter service, including more frequent service during the AM and PM peak periods. The demand profiles, however, show that demand is strongest during the middle of the day; this is also the time of day when trips are at or over seating capacity. Frequencies, therefore, could be increased to operate at 15 minutes all day. This strategy would be most effective if implemented in conjunction with some of the recommendations identified above.
- **Expand span of weekday service.** The last trips of the day on Route 7 have fairly high ridership, especially eastbound service. This indicates demand for longer service, potentially increasing service until 11 PM on weekdays.

- **Expand span of Sunday Service.** Sunday ridership patterns on Route 7 suggest that demand exists for at least one earlier and one later trip in each direction.
- **Eliminate Route 6 service on Sundays in favor of only serving the Route 7 corridor and increase Sunday service levels** Route 6 carries only a handful of riders on Sundays (less than eight per trip) and is not very productive relatively to either the Route 6 Saturday service or the PVRTA system average. Service could be discontinued with the service hours invested in Route 7 instead. As compared with Route 6, Route 7 carries twice as many Sunday riders per hour and per trip.
- **Operate Express Service on Saturday.** Demand on Saturday is very high, with several trips carrying over 30 riders and some with more than 40. One strategy to help manage demand and improve service for riders would be to offer express service between the SBT and the Eastfield Mall on Saturdays. Many riders travel to the Mall at the outer end of the route, thus an express service would improve the service for these riders at the same time it works to help manage demand.
- **Produce separate map for Sunday service.** On Sundays, Route 6 and Route 7 are combined into a single route that travels along State Street but then alternates between service along Berkshire Avenue (Route 6 alignment) and Bay Street (Route 7) alignment. The actual path of the route and its variants are described in a table but not illustrated with a map, making it difficult for some riders to understand.